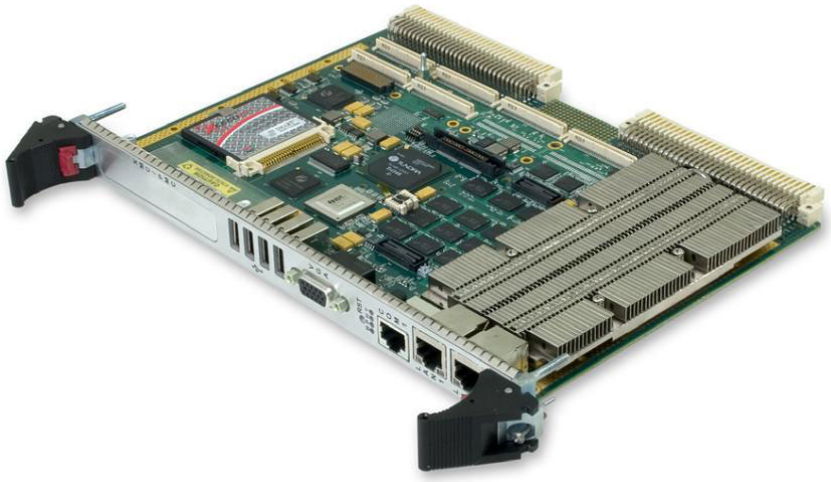
GE
Intelligent Platforms



XVB602

Intel Core i7 Based VME Single Board Computer

Features

- Intel® Core i7 Processor up to 2.53 GHz
  - Integrated two channel DDR3-1067 memory controller with ECC
  - Up to 4 MBytes shared cache
- Up to 8 GBytes soldered DDR3 SDRAM with ECC
- Mobile Intel QM57 Express chipset
- Up to 16 GBytes CompactFlash
- Dual on-board Expansion Sites:
  - One PCI-X PMC/ x4 PCIe XMC expansion site
  - One PCI-X PMC expansion site
- x8 PCIe board-to-board connector (supports EXP237 Carrier/IO expansion board)
- Front IO
  - 2x Gigabit Ethernet
  - 4x USB 2.0 ports
  - 1x VGA
  - 1x COM port
  - NOTE: Some Front IO is only available with a single PMC
- Rear IO
  - 4x SATA ports
  - 1x DVI-I
  - 4x USB 2.0 ports
  - 1x COM port
  - 2x PMC IO
  - 8x GPIO
- Operating System Support for Windows®, VxWorks®, and Linux®
- Single slot 6U VME64 form factor
- Compliant to IEEE STD 1101.2-1992 and ANSI/VITA 20-2001, VITA 30.1

The XVB602 Single Board Computer (SBC) from GE Intelligent Platforms features the highly integrated Core i7 processor platform from Intel. Core i7 offers integrated graphics and memory controller plus dual core processing up to 2.53 GHz.

Coupled with the Mobile Intel QM57 Express Chipset this provides an unmatched level of I/O bandwidth for both on-board and off-board functions.

Features of the Core i7 processor:

- Intel Intelligent Power Technology allows processors to operate at optimal frequency and power.
- Intelligent performance on-demand with Intel Turbo Boost Technology
- Multi-level shared cache improves performance and efficiency by reducing latency to frequently used data
- Hyper-Thread Technology – 2 threads per core
- Streaming SIMD extensions 4.1/4.2

The XVB602 offers two on-board mezzanine expansion sites for enhanced system flexibility, one of which is PMC/XMC capable and one of which is PMC only.

The XVB602 provides further customer defined I/O capabilities with the board-to-board connector for the EXP237 XMC/PMC carrier/IO expansion board, which offers customers three additional PCI-X XMC/PMC expansion sites to utilize.

Specifications

Processor

- Intel Core i7 32nm Processor:
  - ULV @ 1.06 GHz
  - SV @ 2.53 GHz
- 4 MByte shared cache on all processor options
- Integrated two channel DDR3-1067 memory controller with ECC

SDRAM

- Maximum memory configuration of up to 8 GBytes DDR3 SDRAM soldered with ECC

Compact Flash

- CompactFlash up to 16 GB is supported through the conversion of a SATA port from the QM57 chipset to a PATA CF bus interface

UEFI (replaces BIOS)

- The XVB602 System UEFI includes all functions required by the processor core and chipset
- Also supports expansion ROM code for remote booting from either of the dual Ethernet ports

Ethernet

- Dual Gigabit Ethernet interface via two Intel 82574 Gigabit Ethernet controllers – routed to front panel

USB Ports

- Eight USB 2.0 ports: four to front panel I/O, and four to rear via P2
- Keyboard and Mouse (PS2) emulation via USB

VMEbus Backplane Interface

- 2eSST capable via TSi148 (ANSI/VITA 1.5-2003 offering bandwidths up to 320 MB/s)

XVB602 Intel Core i7 Based VME Single Board Computer

Specifications (continued)

Serial Ports
- Two 16550 compatible full duplex async serial ports
- COM1 routed to front panel RJ45 (RS232/422/485)
- COM2 routed to P2 (RS232/422/485) requires transceivers [to convert from TTL] on RTM
- Ports feature independent 16-byte FIFO supporting baud rates up to 115 Kbaud

PMC/XMC Expansion
- Site 1 is PMC (PCI-X up to 64 bit/133 MHz) and XMC (x4 PCIe Gen 2, 2.5 GT/s) capable
- Site 2 is PMC (PCI-X up to 64 bit/133 MHz) capable
- Up to 3 additional mezzanine sites can be added via the EXP237 (see EXP237 data sheet.)

Video
- Provided via the integrated Intel Graphics Controller
- VGA on front panel with DVI-I routed to P2 (for use with ACC-0603 or ACC-0627)
- Any 2 ports can be used for dual display operation

SATA
- Two Gen 2 (3 GB/s) SATA ports to rear IO (P2)
- Two optional Gen 2 (3 GB/s)/e-SATA ports to rear IO (P0) available when P0 option fitted

GPIO
- 8 GPIO pins available when P0 option fitted - software configurable

On-board hard drive
- 2.5" SATA hard drive or Flash disk can be optionally ordered (precludes use of PMC/XMC site 2)

Front Panel Options
- VME Standard
- 1101.10 front panel

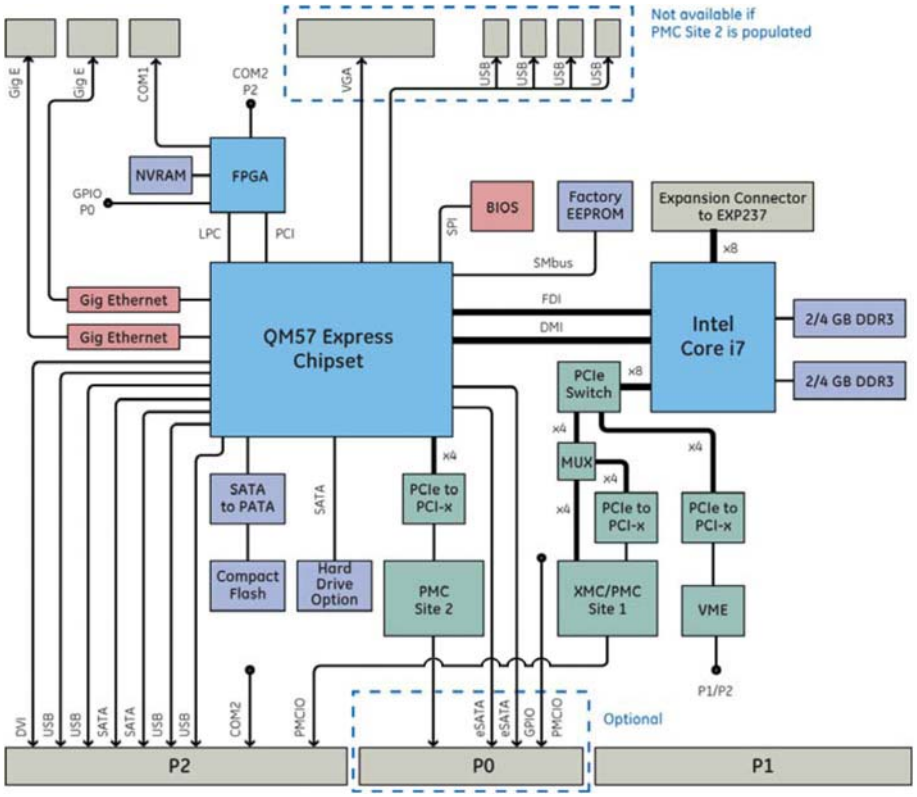
Power Requirements
- +5V (+5/-2.5 percent); Core i7 @ 1.06 GHz: 5A (typical) to 8A (maximum); Core i7 @ 2.53 GHz: 8A (typical) to 12A (maximum)
- Plus ±12V if required by mounted PMC module)

Watchdog/Timers/RTC/Temp sensors
- Two 16-bit timers and two 32-bit timers – software programmable and capable of generating PCI bus interrupts
- RTC 146818 compatible with Li
- CPU die and Chipset die, software readable

Transition Modules and Product Combinations
- ACC-0603
- ACC-0627
- EXP237 – Used via board-to-board connector (precludes use of on-board PMC2)

Software
- Support for Windows, Linux, VxWorks

Block Diagram



Environmental

	Level 1	Level B
Cooling Method	Convection	Convection
Conformal Coating	Optional	Standard
Operating Temp (for upper limit – please consult the manual)	0° to 55° C (300 ft/m)	-20° to 55° C (300 ft/m)
Random Vibration	$0.002g^2/Hz$*	$0.002g^2/Hz$*
Shock	20g**	20g**

*With a flat response to 1000 Hz, 6 dB/Oct roll-off from 1000 to 2000 Hz

**Peak sawtooth 11 ms duration

About GE Intelligent Platforms

GE Intelligent Platforms, a General Electric Company (NYSE: GE), is an experienced high-performance technology company and a global provider of hardware, software, services, and expertise in automation and embedded computing. We offer a unique foundation of agile, advanced and ultra-reliable technology that provides customers a sustainable advantage in the industries they serve, including energy, water, consumer packaged goods, government and defense, and telecommunications. GE Intelligent Platforms is a worldwide company headquartered in Charlottesville, VA and is part of GE Home and Business Solutions. For more information, visit defense.ge-ip.com.

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